

logical books of which the war has sown the seed, it is not a mere *réchauffé* of other people's views, but the fruit of independent and efficient thought, and a solid attempt to advance scientific knowledge. The main portion of the book, comprising 158 pages, consists of a series of lectures delivered at Cambridge. The remaining pages contain reprints of papers written for various journals, which are related only indirectly to the consistent plan of development carried out in the lectures.

The author accepts in the main Freud's conception of the unconscious, and the "mechanisms" of conflict, repression, and so forth whereby Freud seeks to explain the processes occurring in consciousness, although considerable modifications in nomenclature and definition are introduced. He accepts also the view that the activities of consciousness are to be regarded as the resultant of various instinctive forces, but he develops this conception along lines which are partly akin to those worked out by McDougall, and partly the result of an independent mode of approach. The subject is regarded from a biological point of view, and the essential feature of the author's treatment is an attempt to bring the processes of consciousness, both in the normal and in the psychoneuroses, into relation with processes occurring at physiological levels, all being incorporated in a scheme of biological development. Thus suggestion, conflict, repression, and even such phenomena as sleep and hypnosis, are analysed into modes of reaction comparable with those discovered by Head and his fellow-workers to exist in physiological reflexes and in the mechanism of sensation. This view is extremely interesting and suggestive, though it may be doubted whether the relation is not one of analogy rather than of the identity which Dr. Rivers seems to postulate.

The same line of thought is carried on into the author's treatment of the psychoneuroses. Here, again, he accepts the main Freudian position that the psychoneuroses are due to conflicts occurring between the great instinctive forces of the mind, and that they are to be regarded biologically as attempts to find some solution of these conflicts. With regard to the nature of the instinctive forces concerned, however, he brings forward hypotheses which are open to considerable criticism. He suggests, for example, that hysteria is essentially dependent upon the activity of the danger-instincts, and implies that the type of hysteria met with in the war is the fundamental form of that disorder. This generalisation seems to be subject to the same accusation of narrowness and one-sidedness as has been levelled at the corre-

sponding view of Freud that hysteria is essentially dependent upon the sex instincts, and it can scarcely have behind it the weight of clinical experience upon which the latter view was founded. It is to be remarked, moreover, that Dr. Rivers does not discuss the recent work of the Freud school on narcissism and the attempts which have been made to explain the war type of hysteria by means of this conception.

Another noteworthy omission is the absence of any reference to Trotter's views on herd-instinct, which surely ought at least to be considered in a work dealing with the fundamental reactions of the mind.

The papers forming the appendix are all of considerable interest, although, as has been said, they have only an indirect bearing on the main argument of the lectures. The book as a whole is, without doubt, one of the most important recent contributions to psychological literature.

(2) Dr. Tridon's book is of an altogether different type. It makes no claim to put forward any original line of thought, and its aim is best expressed in the author's own words as an attempt "to sum up in a concise form the views of the greatest American and foreign analysts." It includes a description not only of the doctrines of the orthodox Freud school, but also of those of Jung and Adler, who, although they originally worked with the Freud school, have now diverged from it to a very wide extent. To carry out such an aim within the limits of a small book is clearly a very difficult task, and Dr. Tridon will probably fail to satisfy the exponents of any of these divergent schools. He has, however, succeeded in producing a very readable and interesting book.

### French Chemists and the War.

*La Chimie et la Guerre, Science et Avenir.* By Prof. Charles Moureu. ("Les Leçons de la Guerre.") Pp. iii+384. (Paris: Masson et Cie, 1920.) 10 francs net.

THE well-known publishing house of Masson et Cie, Paris, is issuing a series of volumes under the general title of "Les Leçons de la Guerre," with special reference to the experiences, circumstances, and prospects of France. The books which have already appeared deal with the military, naval, and aeronautical lessons of the war; with the effect of the war, immediate and prospective, on French industry; with alimentation and revictualling; and lastly with the influence of science, and particularly of chemistry, on the war, and, reciprocally,

with the influence of the war on the present condition and future development of that science. The volume under review is the work of Prof. C. Moureu, member of the Institute of France, professor of the Collège de France, president of the Chemical Society of France and of the International Union of Chemistry. No one is better fitted to expound the mutual relations of chemistry and war than Prof. Moureu, for no one during its course took a more active part in placing all the resources of that science at the disposal of his country. As is now well recognised, all the Allies vied with Germany in enlisting the services of their chemists in the prosecution of the war, and their united energy, resourcefulness, and skill eventually crushed their adversary. As the war was conducted, military valour, tenacity, and intelligent direction would not alone have decided the issue. Germany had imported a new element into the struggle which gave her an enormous initial advantage. The services of her great chemical manufacturing establishments had been deliberately and sedulously linked up for years previously with the war which was being prepared for in such a manner that, on its outbreak, all their appointments and machinery could at once be made available for its ruthless prosecution by every means which the diabolical ingenuity of their chemists could suggest.

April 22, 1915, which first saw the yellowish-green suffocating cloud of chlorine slowly wafted from the German trenches between Bixschoote and Langemark, is a black-letter day in the history of warfare. The infamous action of the Germans, done in cynical disregard of all international effort to mitigate the horrors of war, shocked the conscience of the civilised world. Whatever trace of knightly prowess or chivalry was left in modern war was thereby destroyed. To employ poisons against your enemy was the work of savages. What, it may be asked, was the ethical value of the boasted *Kultur* of a nation which could not only initiate, but also strive to develop and to intensify the evil of such agencies by all the means that its scientific knowledge and skill could suggest? The following table, taken from Prof. Moureu's book, giving a list of the chemical poisons, solid, liquid, and gaseous, which the Germans flung at their adversaries in the course of the war, requires no comment—at least to the organic chemist at all familiar with the noxious characters of such products. Their physiological action became only too well known by bitter experience.

Date when first used on the field of battle.	Name of substance.	Chemical formula.	Physiological action.
1915 April	Chlorine (gas)	$\text{Cl}_2$	Suffocating
June	Bromine (liquid)	$\text{Br}_2$	Suffocating
June	Benzylbromide (liquid)	$\text{C}_6\text{H}_5-\text{CH}_2\text{Br}$	Lachrymatory
July	Bromoacetone (liquid)	$\text{CH}_3-\text{CO}-\text{CH}_2\text{Br}$	Suffocating, lachrymatory
Aug.	Methyl chloro-sulphonate (liquid)	$\text{SO}_2 \begin{cases} \text{Cl} \\ \text{OCH}_3 \end{cases}$	Suffocating
Aug.	Chloromethyl chloroformate (liquid)	$\text{Cl}-\text{COOCH}_2\text{Cl}$	Suffocating
Aug.	Bromomethyl ethylacetone (liquid)	$\text{CH}_3-\text{CO}-\text{CHBr}-\text{CH}_3$	Suffocating, lachrymatory
1916 July	Trichloromethyl chloroformate (liquid)	$\text{Cl}-\text{COOCCl}_3$	Suffocating
Dec.	Phosgene (gas)	$\text{COCl}_2$	Suffocating
1917 May	Chloropicrin (liquid)	$\text{CCl}_3\text{NO}_2$	Suffocating, lachrymatory
July	"Mustard gas" (ypérite) (liquid)	$\text{S} \begin{cases} \text{CH}_2\text{CH}_2\text{Cl} \\ \text{CH}_2\text{CH}_2\text{Cl} \end{cases}$	Suffocating, lachrymatory, vesicant
Sept.	Diphenylchloroarsine (solid)	$(\text{C}_6\text{H}_5)_2\text{AsCl}$	Suffocating, sternutatory
	Phenyldichloroarsine (liquid)	$\text{C}_6\text{H}_5\text{AsCl}_2$	
Sept.	Phenylcarbylamine chloride (liquid)	$\text{C}_6\text{H}_5\text{N}:\text{C}:\text{Cl}_2$	Nauseous and toxic
1918 April	Ethylarsine dichloride (liquid)	$\text{C}_2\text{H}_5\text{AsCl}_2$	Toxic, sternutatory
April	Ethylarsine dibromide (liquid)	$\text{C}_2\text{H}_5\text{AsBr}_2$	Toxic, sternutatory
June	Diphenylarsine cyanide (solid)	$(\text{C}_6\text{H}_5)_2\text{AsCN}$	Sternutatory
Sept.	N-Ethylcarbazol (solid)	$\text{C}_6\text{H}_4-\text{C}_6\text{H}_4$ $\quad \quad \quad \text{NC}_2\text{H}_5$	Sternutatory

Lord Kitchener at first refused to sanction reprisals of a like nature. But the French were prompt to meet the new danger. They realised that such reprisals were imperatively necessary in self-defence. Although, as was the case with all the Allies, France was totally unprepared for such savagery, before the end of April, 1915, she had organised means of protection and of counter-aggression in which the author of the book under review took a leading part.

Considerations of space preclude any detailed account of the way in which the dastardly action of the Germans was met and finally mastered. By the united efforts of the Allies, working in concert, the Germans were eventually taught a lesson which made their leaders bitterly regret that they had ever resorted to "poison gas" as an offensive

agent. It brought its own Nemesis by ultimately destroying the German *moral*.

The story of the organisation of the chemical and medical services of the war, as regards France, is the main theme of Prof. Moureu's book. He explains in detail how the whole procedure was gradually systematised. Nothing is more remarkable than the rapidity with which the chemical and medical strength of the nation was enlisted and co-ordinated. France is pre-eminently a logical nation, and her mental habitudes served her admirably, and, indeed, saved her in the crisis which had well-nigh overwhelmed her.

As regards her chemists, practically every name of note in the French chemical world is to be found in the lists furnished by Prof. Moureu. From first to last 268 French chemists were employed in the chemical services of the war. Thirteen of the laboratories in Paris were wholly concerned with the study of counter-aggressives alone. But the work of reprisals extended far beyond counter-aggressives. The services of the chemists were concerned with metallurgy, the production of alloys, the manufacture of explosives, aeronautics, camouflage, supply, sanitation, alimentation, medicaments, photographic chemicals, radio-active substances, and a host of minor matters, such as the recovery of solvents, optical glass, potash, platinum, etc. France, like this country, had gradually allowed Germany to obtain control of the manufacture of many articles as essential in war as in peace. Their production by the Allies had to be suddenly improvised. In some cases little or nothing was known concerning the details of their manufacture, and study and experiment were needed before their preparation on the large scale could be attempted.

But when the German onslaught had spent itself at the Marne France gained a breathing time, and she rapidly made up her leeway. Her success will permanently benefit her industry. She has consolidated the manufacture of certain articles for which, like us, she was formerly wholly dependent on Germany, and is now in a position to export them—a consummation which she owes, in great measure, to the patriotism and self-sacrifice of her chemists.

Prof. Moureu has conferred a benefit on his country by the compilation of this admirable work. The lessons it conveys are of profound importance to the national well-being. So far we have had nothing exactly like it in this country. But England has a no less thrilling story to tell. And it should be told quickly, lest we forget. Prof. Moureu's book affords an example of how to tell it.

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## Sport and Administration in Central Africa.

*The Backbone of Africa: A Record of Travel during the Great War, with Some Suggestions for Administrative Reform.* By Sir Alfred Sharpe. Pp. 232. (London: H. F. and G. Witherby, 1921.) 16s. net.

SIR ALFRED SHARPE first entered East Africa for the purpose of big-game shooting in about 1886. He was on long leave just then from a magistracy in Fiji. In 1887 he joined Lugard at the north end of Lake Nyasa, Lugard being engaged in a desperate fight with the Arab slave-traders established to the north-west of the Nyasa lake. In 1888 Sharpe was wounded in this bitter struggle, and in 1889 he returned and became a British Vice-Consul in that region. In 1891 he was made a Consul under the present writer's Commissionership, and served with him in what was then called "British Central Africa" until Johnston's transference to Tunis in 1897. Afterwards Sharpe became Governor of Nyasaland, and remained in that position until his retirement after the Coronation of King George in 1911. He was given a prominent part in the Coronation procession.

In 1912, unable to abate his interest in Africa, Sir Alfred Sharpe returned there as a private traveller and an adviser of highly placed trading companies. In this capacity, and still more as just one athirst for the solving of African secrets in fauna, flora, geography, and ethnology, he penetrated and repenetrated the eastern half of Africa from the southernmost parts of Portuguese East Africa to the Sudan and Egypt in the years between 1912 and 1917. He had hoped to serve strenuously in our wars with Germany during much of that period, but just because he so singularly knew East Africa, South-east Africa, Uganda, and Tanganyika, any British commission was withheld from him by Lord Kitchener; and his war service, for which he was recently rewarded, was with the Belgian armies. Since 1918 he has been making a special study of Liberia and contiguous regions in West Africa.

The book here reviewed is of great interest because it is so truthful. Sir Alfred Sharpe has no object to serve other than that of telling the truth about Africa, whether it suits one's theories or not. Whilst the material of the present work was being put together he was already lecturing to the Royal Geographical Society on Liberia, in the most forested part of West Africa.

For the naturalist, the best parts of the book under review are the statements about elephants (Sir Alfred, though never an offender against big-